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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MATTIS, JASON E

ART UNIT	PAPER NUMBER
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2616

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/518,276	BRAJAL ET AL.	
	Examiner	Art Unit	
	Jason E. Mattis	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) ____ is/are allowed.
- 6) Claim(s) 1-10 is/are rejected.
- 7) Claim(s) ____ is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on ____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1 paper</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 1 recites the limitation "the origin" in line 7. There is insufficient antecedent basis for this limitation in the claim. It is unclear from the claim what "the origin" is referring to since there is no prior mention of "an origin" in the claim. It is recommended that the claim be amended such that it is clear what is meant by "the origin".

Claims 2-4 and 8 are rejected since they depend on rejected claim 1.

Claim 5 is rejected for reasons similar to that of claim 1 (See line 26 of claim 5 for reference to use of the term "the origin" with out proper antecedent basis).

Claim 6 is rejected for reasons similar to that of claim 1 (See line 5 of claim 6 for reference to use of the term "the origin" with out proper antecedent basis).

Claim 7 is rejected for reasons similar to that of claim 1 (See line 12 of claim 7 for reference to use of the term "the origin" with out proper antecedent basis).

Claim 9 is rejected since it depends on rejected claim 6.

Claim 10 is rejected for reasons similar to that of claim 1 (See lines 23-24 of claim 10 for reference to use of the term "the origin" with out proper antecedent basis).

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 8 and 9 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. More specifically, claims 8 and 9 are directed towards a computer program product computing a set of instructions. A computer program product comprising instructions does not constitute statutory subject matter in of itself. In order for a computer program product to be considered statutory subject matter it must be tangibly embodied (for example, as a computer readable medium comprising instructions). It is recommended that claims 8 and 9 be amended such that the computer program product of each claim is tangibly embodied.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (U.S. Pat. 6373861 B1) in view of Wei et al. (U.S. Pat. 6714526 B2).

With respect to claims 1 and 5, Lee discloses a transmitter implementing a method for transmitting data using multi-carrier CDMA for accessing a transmission system (**See column 1 lines 33-39 and Figure 1 of Lee for reference to a transmitter 100 for transmitting data using a multi-carrier CDMA for accessing a multi-carrier CDMA system using an OFDM/CDMA technique**). Lee also discloses a modulator modulating the data to be transmitted using OFDM to produce OFDM modulated data symbols and a mixer spreading the OFDM modulated data symbols with spreading codes (**See column 1 line 40 to column 2 line 17 and Figure 1 of Lee for reference to both modulating transmission data using OFDM orthogonal codes and spreading the transmission data using CDMA PN spreading sequences**). Lee does not specifically disclose the spreading codes including sequences predefined so that they satisfy predetermined auto-correlations and/or cross-correlations criteria within a region around the origin defined as an Interference-Free Window.

With respect to claim 2, Lee discloses the transmission system comprising a transmitter, a receiver, and a transmission channel for transmitting the data from the transmitter to the receiver via the transmission channel (**See column 1 lines 33-39 and Figure 1 of Lee for reference to the system comprising a transmitter 100, a receiver 120, with the transmitter 100 and receiver 120 using both forwarding link**

and reverse line transmission channels for transmitting the data). Lee does not specifically disclose the transmission channel including multi-paths with associated time lengths and a delay spread defined as a time length corresponding to an estimate of a difference between the time lengths of at least two different multi-paths with the length of the IFW depending on the channel delay spread.

With respect to claim 3, Lee does not disclose using sequences chosen such that their off-peak partial autocorrelation and partial cross-correlations values are zero within the IFW.

With respect to claim 4, Lee does not disclose the sequences comprising zero gaps.

With respect to claims 6 and 7, Lee discloses a receiver implementing a method for receiver data using multi-carrier CDMA for accessing a transmission system (**See column 1 lines 33-39 and Figure 1 of Lee for reference to a receiver 120 for receiving data using a multi-carrier CDMA for accessing a multi-carrier CDMA system using an OFDM/CDMA technique**). Lee also discloses modulating the data to be transmitted using OFDM to produce OFDM modulated data symbols and spreading the OFDM modulated data symbols with spreading codes (**See column 1 line 40 to column 2 line 17 and Figure 1 of Lee for reference to both modulating transmission data using OFDM orthogonal codes and spreading the transmission data using CDMA PN spreading sequences**). Lee further discloses demodulating the received data according to the transmission sequences used (**See column 2 lines 18-39 and Figure 1 of Lee for reference to receiver 120 demodulating received data**

according to the transmission sequences used). Lee does not specifically disclose the spreading codes including sequences predefined so that they satisfy predetermined auto-correlations and/or cross-correlations criteria within a region around the origin defined as an Interference-Free Window.

With respect to claims 8 and 9, Lee does not disclose a computer program product implementing instructions to perform the method.

With respect to claim 10, Lee discloses a system comprising transmitter and receiver for transmitting data using multi-carrier CDMA for accessing a transmission system (**See column 1 lines 33-39 and Figure 1 of Lee for reference to a system including a transmitter 100 and receiver 120 for transmitting and receiving data using a multi-carrier CDMA for accessing a multi-carrier CDMA system using an OFDM/CDMA technique**). Lee also discloses modulating the data to be transmitted using OFDM to produce OFDM modulated data symbols and spreading the OFDM modulated data symbols with spreading codes (**See column 1 line 40 to column 2 line 17 and Figure 1 of Lee for reference to both modulating transmission data using OFDM orthogonal codes and spreading the transmission data using CDMA PN spreading sequences**). Lee does not specifically disclose the spreading codes including sequences predefined so that they satisfy predetermined auto-correlations and/or cross-correlations criteria within a region around the origin defined as an Interference-Free Window.

With respect to claims 1-10, Wei et al., in the field of communications, discloses using spreading codes including sequences predefined so that their off-peak

partial autocorrelation and partial cross-correlations values are zero within an IFW (**See the abstract, column 3 line 32 to column 4 line 14, column 6 line 66 to column 7 line 40 of Wei et al. for reference to an LAS-CDMA system including LS codes, which are spreading codes, designed such their autocorrelations and cross-correlation values are zero within an Interference Free Window**). Wei et al. also discloses a transmission channel including multi-paths with associated time lengths and a delay spread defined as a time length corresponding to an estimate of a difference between the time lengths of at least two different multi-paths with the length of the IFW depending on the channel delay spread (**See column 9 lines 38-61 of Wei et al. for reference to selecting the IFW based on the multi-path propagation delay profile of a mobile user**). Wei et al. further discloses the sequences comprising zero gaps (**See column 4 lines 45-60 and Figure 2 of Wei et al. for reference to using a variable size gap, which is a zero gap, with the LS code sequences**). Using sequences as described by Wei et al. has the advantage of reducing interference.

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Wei et al., to combine using sequences as described by Wei et al., with the system and method of Lee, with the motivation being to reduce interference.

With respect to claims 8 and 9, Wei et al. discloses implementing a transmission method using a computer program product performing instructions (**See column 10 lines 41-54 of Wei et al. for reference to elements of a transmission system and method using computer software instructions, which comprising a**

computer program product, to implement the method). Using a computer program product performing instructions to implement a method has the advantage of allowing the method to implemented and adapted to a wide variety of communication devices using computer processors.

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Wei et al., to combine using a computer program product performing instructions to implement a method, as described by Wei et al., with the system and method of Lee, with the motivation being to allow the method to implemented and adapted to a wide variety of communication devices using computer processors.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason E. Mattis whose telephone number is (571) 272-3154. The examiner can normally be reached on M-F 8AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



jem

Jason E Mattis
Examiner
Art Unit 2616